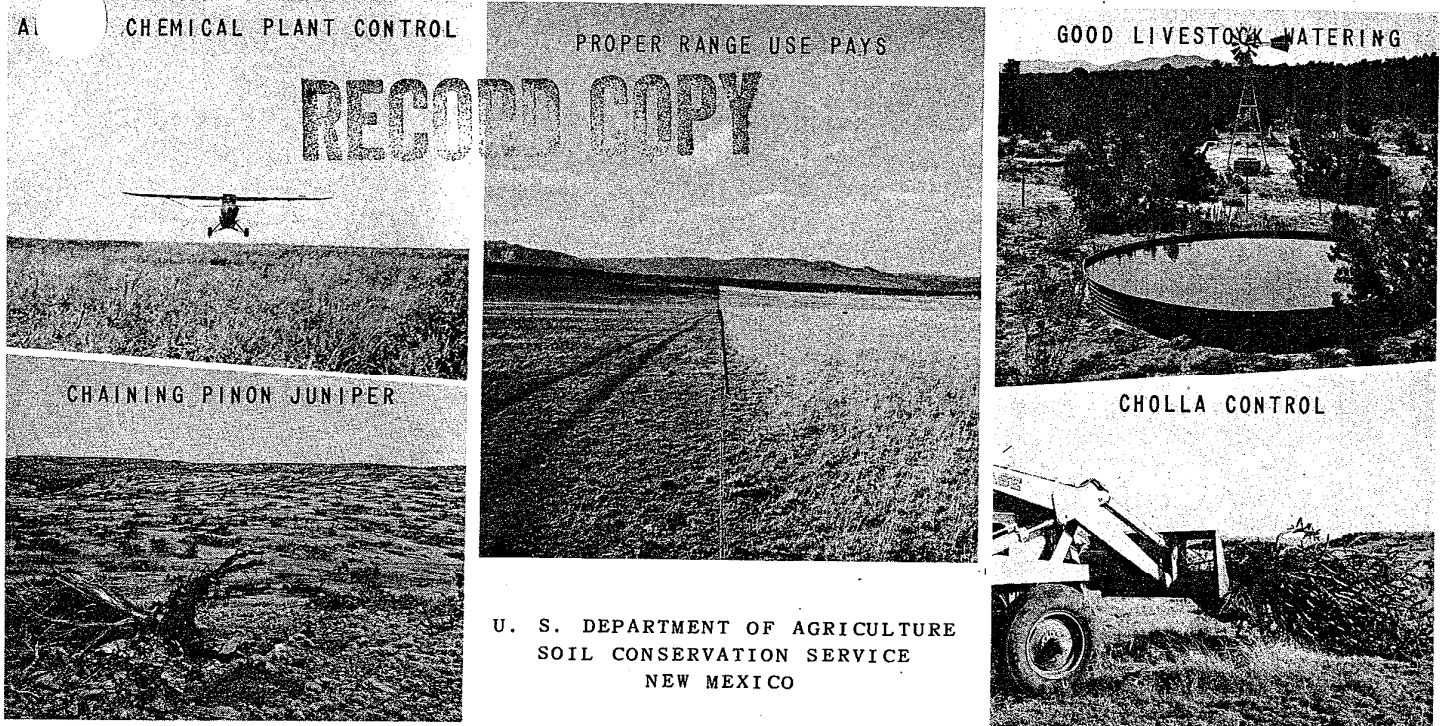


RANGE CONSERVATION - TECHNICAL NOTES



RANGE TECHNICAL NOTE No. 17

February 21, 1967

Subject: RANGE MANAGEMENT BEFORE AND AFTER BRUSH CONTROL (Part I)

The information in this Technical Note was developed at a range management workshop, with Soil Conservation Service and University personnel contributing.

It is recognized that prescribed specific management practices for the many diverse and varying conditions found on rangelands cannot be made until a careful examination and evaluation of the conditions and problems that are involved has been made on the site in each case. For this reason generalizations have been made based on research and on observations where research is lacking. To a degree these serve as guidance for on-site evaluations, but may not always apply to specific local conditions.

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SOME PRINCIPLES OF PLANT GROWTH AS RELATED TO BRUSH AND ITS CONTROL

Plants compete for moisture, light, nutrients and space. One or more of these elements soon becomes the limiting factor for growth and one or both plants in competition is reduced. Grasses and forbs can compete with woody plants and reduce their rate of growth on rangeland. Also, woody plants can and do decrease the yield of herbaceous plants as well as causing a change in kind of plants.

Many plants produce substances that inhibit the establishment and growth of other species. Conversely in many cases plants may be mutually beneficial to each other.

Plants manufacture food in their leaves. Root systems are supplied with material for growth and energy by the food produced by the leaves. Plants need all their leaves left intact to support a large and effective root system, to compete successfully with other plants and to increase following brush control. Grazing management which includes deferred grazing gives the grazable plants a chance to do this.

Evidence in the field indicates in general that areas of significant amounts of brush should not be controlled unless the grazing management will be such as to maintain or improve the herbaceous ground cover.

An outline of points to be considered relative to brush control are:

- I. A radical change in the plant environment takes place when brush is effectively controlled.
 - a. Soil moisture previously used by the woody plants becomes available for other plants to use.
 - b. More sunlight is available for the understory plants. This extra sunlight could be more beneficial to some kinds of plants than others. (Shade tolerant plants may not be adapted to the extra sunlight.)
 - c. Soil and surface air temperature increases greatly where shade is removed (10% to 30% increase in summer). Young plants formerly in the shade need every opportunity to increase in size to grow cover to reduce summer temperature.
 - d. Plants growing in the open between brush plants would not be so greatly affected by increased light but they will have more available soil moisture than before.
- II. This changed microclimate (temperature, moisture, light and soil) is ripe and ready to be used by existing plants or by other plants.

- a. The first to increase and fill this void in general are those presently growing there or having seed present.
- b. The best kinds of range plants adapted to the site, and often on poor range, the last of their kind, are usually to be found in the brush shade or up under the brush where livestock could not reach them.
- c. If these plants are not permitted to increase because of livestock grazing or other factors, then other plants not grazed will more likely succeed.
- d. The plants present or first to get there (usually by seed) have the best opportunity for growth and spread the first year; then the more permanent slower growing and spreading plants will gradually come in if permitted to do so.
- e. Range seeding and/or grazing management can be done to select to a degree the kinds of plants to take the place of the brush.
- f. Improving range forage production by avoiding the grazing from renewed growth of desired forage plants, both formerly shaded and in the open, until they reach full size and vigor is a valid and sound practice in range management supported by research and recorded observations and measurements.

III. There is some research evidence and observation in the field that many brush plants establish themselves from seed in years following drought or heavy grazing, which reduces and weakens the grass cover.

- a. Pricklypear (research) showing light needed for germination.
- b. New Mexico research shows mesquite germinate most readily when covered by eroding soil one inch deep.
- c. Field observations of "age classes" of mesquite show a high percent of plants are in age groups that coincide with previous droughts or bare range conditions.
- d. Tarbush germinating in existing sod did not survive 1965. It did establish in areas without competing cover.

Deferred grazing and proper use to maintain a good grass cover could contribute to a reduction of re-establishment of brush plants from seed in later years.

IV. Field observations indicate that the grazing of deer has caused no significant damage or undesirable effects to grasses on

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rangelands where brush control has been done, or where domestic stock has been removed (rested).

- V. Research indicates that reproduction of deer has increased where sheep and goats have been removed seasonally from the range in a deferment program. Deer have preferred pastures where livestock have been removed and the pasture is deferred.